ABSTRACT OF THE INVENTION

The present invention provides a method to fabricate an organic memory device, wherein the fabrication method includes forming a lower electrode, depositing a passive material over the surface of the lower electrode, applying an organic semiconductor material over the passive material, and operatively coupling the an upper electrode to the lower electrode through the organic semiconductor material and the passive material. Patterning of the organic semiconductor material is achieved by depositing a silicon-based resist over the organic semiconductor, irradiating portions of the silicon-based resist and patterning the silicon-based resist to remove the irradiated portions of the silicon-based resist. Thereafter, the exposed organic semiconductor can be patterned, and the non-irradiated silicon-based resist can be stripped to expose the organic semiconductor material that can be employed as a memory cell for single and multi-cell memory devices. A partitioning component can be integrated with the memory device to facilitate stacking memory devices and programming, reading, writing and erasing memory elements.